

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In Re Application of:

Arun Kumar Jaura et al

Confirmation No.: 1850

Serial No. 10/064,998

Group Art Unit: 3618

Filed: 09/06/2002

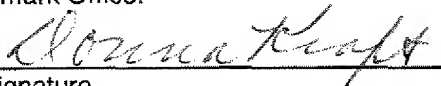
Examiner: Campbell, Kelly E.

For: COOLING SYSTEM AND METHOD FOR A HYBRID ELECTRIC  
VEHICLE

Attorney Docket No. 201-1225 (81078760)

**CERTIFICATE OF MAILING/TRANSMISSION**

I hereby certify that this correspondence is, on the date shown below, being filed electronically through EFS-Web of the United States Patent and Trademark Office.

  
Signature

Date: 7-10-2006

Donna Kraft

**BRIEF ON APPEAL**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The following Appeal Brief is submitted pursuant to the Notice of Appeal dated May 15, 2006, for the above-identified application.

**I. Real Party in Interest**

The real party in interest in this matter is Ford Global Technologies, LLC, which is a wholly owned subsidiary of Ford Motor Company both in Dearborn, Michigan (hereinafter "Ford").

**II. Related Appeals and Interferences**

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

**III. Status of the Claims**

Claims 1 and 3-11 stand rejected.

**IV. Status of Amendments**

There have been no Amendments filed after the final rejection.

**V. Summary of Claimed Subject Matter**

As set forth in various claims, particularly Claim 1 with reference to Figures 2 and 3, as well as in paragraphs 30, 31, 32, 36, and 37, Appellants' claimed cooling system for a vehicle powertrain having a motor and a transmission includes a cooling loop having a heat exchanger and conduits for providing a fluid flow connection between the motor stator housing and a transmission and the heater exchanger. The cooling loop is in heat conductive contact with the motor stator housing and with the transmission.

According to Claim 3, a controller used within the system, which receives and processes inputs from at least one sensor and which commands an auxiliary pump to operate when the processed input of the sensor exceeds a preselected threshold, is a vehicle system controller.

According to Claim 4, the inventive cooling loop further comprises bypass conduits and bypass valves having actuators which are independently controllable by the controller.

According to Claim 5, the motor of the present system is an integrated-starter-generator.

According to Claim 6, the powertrain is stated to be arranged in a series configuration.

According to Claim 7, the auxiliary pump is stated as being internal to the transmission, and in Claim 8 the pump is stated to be external to the transmission.

In Claim 9, the cooling system is said to be configured to maintain a transmission temperature not greater than 250 degrees and the motor not greater than 630 degrees Fahrenheit.

In Claims 10 and 11, the stator housing is stated to be overlapped by transmission housing or adjacent to transmission housing.

## **VI. Grounds of Rejection to be Reviewed on Appeal**

The following issues are presented in this appeal:

1. Are Claims 1 and 3-11 properly rejected under 35 U.S.C. §103(a) as being unpatentable over Buglione (US5845,731) modified by Soontag (US6,213,233) and Hasebe (US6,467,286)?
2. Is Claim 5 properly rejected under 35 U.S.C. §103(a) as being unpatentable over Buglione modified by Soontag and Hasebe and further in view of Prabhu (US6,670,788)?

## **VII. Argument**

**Are Claims 1 and 3-11 properly rejected under 35 U.S.C. §103(a) as being unpatentable over Buglione (US5845,731) modified by Soontag (US6,213,233) and Hasebe (US6,467,286)?**

### **Claims 1 and 3-11**

Appellants respectfully submit that Claims 1 and 3-11 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over Buglione as modified by Soontag and Hasebe. The Examiner states that Buglione teaches a cooling system having a cooling loop including a heat exchanger and conduits providing fluid flow connection between the motor stator housing and a transmission and heat exchanger. The Examiner is in error. The incorrectness of the Examiner's assertion regarding the teaching of Buglione may be seen with respect to Buglione's Figure 3A, wherein it is noted that Buglione's conduit 64 and 110 provide coolant to only the rotating electrical machinery within Buglione's device; no cooling is provided, in terms of cooling with a fluid flow connection, between any motor stator housing and a transmission. The only cooling available to Buglione's transmission elements would be conductive cooling through the case of his device.

Appellants respectfully submit that neither Buglione, nor Soontag, nor Hasebe, whether taken singly, or in combination with each other, either teach or suggest Appellants' claimed invention. Soontag teaches a cooling loop, but teaches nothing regarding a cooling loop extending between the motor stator housing and a transmission of a vehicle. Hasebe similarly lacks any teaching of cooling flowing between the motor stator housing and a transmission of a vehicle. As a result, each of Claims 1 and 3-11 is allowable over the proffered rejection and should be passed to issue.

With regard to Claims 7 and 8, the Examiner states that Soontag discloses an arrangement or displacement of a mechanical pump and the auxiliary pump to be of no importance or significance. However, Appellants respectfully submit that Claims 7 and 8 depend from Claim 1, which is allowable over the references asserted by the Examiner and as a result, Claims 7 and 8 should be passed to issue.

Regarding Claim 9, the Examiner states that the temperature range cited therein is obvious. However, Claim 9 too also depends from Claim 1 and is allowable over the Examiner's rejection.

**Is Claim 5 properly rejected under 35 U.S.C. §103(a) as being unpatentable over Buglione modified by Soontag and Hasebe and further in view of Prabhu (US6,670,788)?**

#### **Claim 5**

The Examiner has rejected Claim 5 as being unpatentable over Buglione modified by Soontag, Hasebe, and further in view of Prabhu. The Examiner states that Prabhu teaches a hybrid vehicle including an integrated starter-generator. Nevertheless, Claim 5 is also dependent from Claim 1, which is allowable over the proffered rejection inasmuch as neither Buglione nor Soontag nor Hasebe nor Prabhu either teach or suggest the claimed invention in which a cooling loop in heat conductive contact with a motor stator housing and with a transmission includes a heat exchanger and conduits providing a fluid flow connection between the motor stator housing, the transmission, and the heat exchanger. As a result, each of the claims remaining in this case is allowable over the proffered rejections and should be passed to issue. The Board is hereby requested to direct the Examiner to issue these claims.

In an earlier response, the Examiner cites a Merriam-Webster Collegiate Dictionary for the definition of "transmission", as including "**the propeller shaft** by which the power is transmitted from an automobile engine to a live axle." (emphasis is original). Although the Examiner's intention in citing this definition is not clear, what is clear is that according to normal automotive parlance, the term "propeller shaft" means a driveshaft extending from either a conventional rear-drive transmission to a rear drive axle, or from a 4X4 transfer case to a front or rear drive axle, in the manner this has been accomplished for at least 60 years. The term "propeller shaft" is never used to refer to shafts lying within a transmission or extending from a front-drive transaxle to a wheel. The former might be termed a "mainshaft", and the latter a "half-shaft".

#### **VIII. Claims Appendix**

A copy of each of the claims involved in this appeal, namely Claims 1 and 3-11, is attached as an Appendix.

#### **IX. Evidence Appendix**

None.

#### **X. Related Proceedings Appendix**

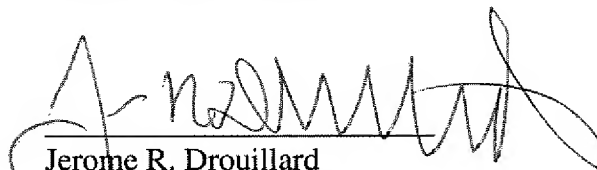
None.

#### **XI. Conclusion**

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to deposit account 06-1510.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Jerome R. Drouillard", written over a horizontal line.

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**CLAIMS APPENDIX**

1. A cooling system for a vehicle powertrain having a motor and a transmission comprising:

said motor having a stator housing;

a cooling loop in heat conductive contact with said motor stator housing and with said transmission;

said cooling loop comprising a heat exchanger and conduits providing a fluid flow connection between said motor stator housing, said transmission, and said heat exchanger;

said cooling loop further comprising a mechanical transmission pump and an auxiliary pump; and

said cooling system further comprising a controller for receiving and processing input from at least one vehicle sensor, and for commanding said auxiliary pump to operate when the processed input of at least one vehicle sensor exceeds a pre-selected threshold.

3. The cooling system of claim 1, wherein the controller is a vehicle system controller.

4. The cooling system of claim 1, wherein:

said cooling loop further comprises bypass conduits and bypass valves having actuators independently controllable by the controller to operate when the processed input from at least one vehicle sensor exceeds a pre-selected threshold; and

said auxiliary pump is reversible.

5. The cooling system of claim 1, wherein the motor is an integrated-starter-generator.

6. The cooling system of claim 1, wherein the powertrain is arranged in a series configuration.

7. The cooling system of claim 1 wherein the auxiliary pump is internal to the transmission.

8. The cooling system of claim 1 wherein the auxiliary pump is external to the transmission.

9. The cooling system of claim 1, wherein the cooling loop is configured to maintain a transmission temperature at no greater than 250 degrees Fahrenheit and a temperature for said motor at no greater than 630 degree Fahrenheit.

10. The cooling system of claim 1, wherein the stator housing is overlapped by a transmission housing.

11. The cooling system of claim 1, wherein the stator housing is adjacent to a transmission housing.



**EVIDENCE APPENDIX**

None.

**RELATED PROCEEDINGS APPENDIX**

None.